Integrating Economics and Ecology to Value Water Quality Improvements in Lakes

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In this unique interdisciplinary effort, economists and ecologists have joined forces to study the relationship between biophysical measures of water quality and the value that residents place on changes in water quality, as measured by their willingness to pay for water quality improvements. By gathering recreational use and stated preference data over a four-year period from a large, random sample of Iowans (over 5000/yr) concerning 130 publicly owned lakes in the state, we have developed a unique panel data set from which numerous scientific and policy studies will be completed.

In this poster, we outline the overall project and focus on a first set of results concerning the value of water quality improvements and their role in prioritizing the clean up of Iowa lakes. Specifically, using econometric, discrete choice models of recreation demand, we estimate the willingness to pay for water quality improvements at the study lakes. A subset of these estimates: to improve water quality in all of the lakes in the study region to a pristine level, the average Iowa household would be willing to pay over $200/year resulting in a total WTP for all residents of the state of over $240 million. We also estimated the value of improving water quality at 31 of the lakes identified as impaired on the preliminary TMDL list for Iowa to a level that would likely remove them from listing. The per household benefits from this improvement were about $5, resulting in a total value of about $5.6 million. In contrast, we estimated the value of improving a target set of nine lakes to pristine values and found a much higher value than the smaller improvement represented by removal from the TMDL list.

We have worked closely with the Iowa Department of Natural Resources in developing the survey instrument in the first two years of the study and are developing a web site linking our results to other information on water quality and facilities at the study lakes. Initial funding from the Iowa DNR was used to support the first year of the study, with EPA providing the necessary additional dollars to make the four-year effort possible.